WE CLAIM:

1. A method of coupling an optical waveguide to a light emitting diode (LED) package having a semiconductor chip encased in a resin case, the method comprising steps of:

removing a section of the resin case to expose a surface closely proximal to a light-emitting face of the semiconductor LED chip and substantially perpendicular to light-generating layers of the semiconductor LED chip; and

mounting an input end of the optical waveguide proximal the surface and substantially perpendicular to the surface, such that an input end face of the optical waveguide is mounted closely proximal the light-emitting face of the semiconductor chip.

2. A method as claimed in claim 1, wherein the step of mounting the input end further comprises steps of:

aligning the input end of the optical waveguide with a light-generating layer of the semiconductor chip; and

affixing the aligned input end of the optical waveguide to the resin case of the LED package.

3. A method as claimed in the claim 2, wherein the step of aligning the input end of the optical waveguide comprises steps of:

driving the semiconductor LED chip to emit light;

monitoring an optical power of light coupled into the optical fiber; and

adjusting either one or both of a position and an orientation of the optical fiber so as to maximize the monitored optical power.

4. A method as claimed in the claim 2, further comprising steps of:

applying a photopolymer between the surface and the input end of the optical waveguide; and

curing the photopolymer by irradiation with either one or both of light and heat.

5. A method as claimed in the claim 4, further comprising steps of coupling light from a fixing light source into the optical fiber, such that the coupled light propagates through the optical fiber to irradiate the photopolymer.

6. A method as claimed in claim 4, wherein the photopolymer is a curable resin responsive to any one or more of light, heat and electric field.

7. An apparatus for coupling an optical waveguide to a light emitting diode (LED) package having a semiconductor chip encased in a resin case, the apparatus comprising:

a surface of the resin case closely proximal to a light-emitting face of the semiconductor chip and substantially perpendicular to light-generating layers of the semiconductor chip; and

an input end of the waveguide mounted proximal the surface and substantially perpendicular to the surface such that a core of the waveguide is

substantially aligned with an active layer of the LED chip.

8. An apparatus as claimed in claim 6, wherein a photopolymer filler is applied between the surface of the resin case and the input end of the optical waveguide.

9. An apparatus as claimed in claim 7 wherein the photopolymer is adapted to be cured by any one or more of light, heat and electric field.

10. An apparatus as claimed in claim 8 wherein the light is UV radiation.

11. A device for automated coupling, optimization and fixation of a waveguide to a light emitting source, comprising:

a fiber alignment system with precise V grooves and control feedback;

a high power external light source for fixing;

a light injection and reflection system;

an alignment system controller.

12. An apparatus for coupling an optical waveguide to a light emitting device with controllable coupling efficiency, comprising:

a filler material composed of any one or more of an electro-optic, magneto-optic, thermo-optic, light polarization sensitive (like liquid crystals, polymer stabilized liquid crystals, polymer dispersed liquid crystals, etc.), or nonlinear material used between the coupling surfaces.